

PALAEOCRANGON, A PERMIAN ISOPOD CRUSTACEAN

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Fig. 1

Recent work on the Isopod suborder Phreatoicoidea (Nicholls 1943-44) which dates back to the lacustrine Triassic of Australia (Chilton 1918) has made it possible to review the position of a hitherto doubtful Permian fossil from England and Germany, *Palaeocrangon problematicus* (Schlotheim) (Fig. 1a). Bate considered it first as an Isopod (in Kirkby 1857, where the genus was re-named *Prosoponiscus*, without justification), and later as an Amphipod (Bate 1859), an interpretation in which von Ammon (1882) and others concurred. Geinitz (1863) questioned Bate's

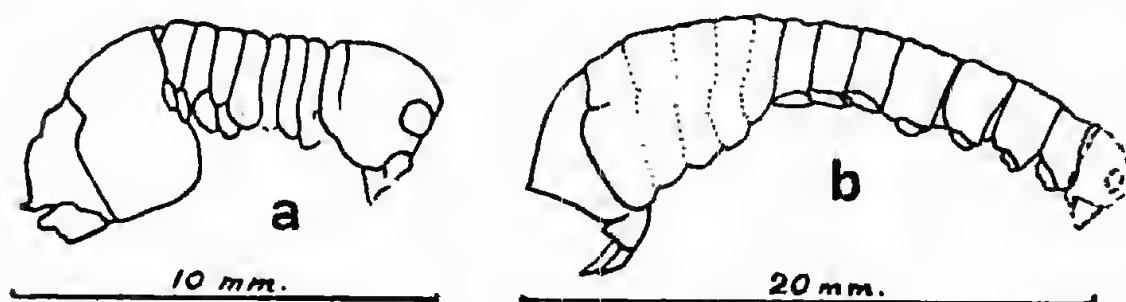


Fig. 1. a—*Palaeocrangon problematicus* (Schlotheim). Reconstruction from figures given by Bate, 1859, pl. 6.

b—*Protamphisopus winnamattensis* (Chilton). Reconstruction, from Nicholls, 1943, fig. 26A, with most of the appendages omitted and boundaries between abdominal segments 1-5 shown by dotted lines.

reconstruction and later van Straelen (1931) listed the fossil as "incertae sedis". *Palaeocrangon* has a head with a peculiarly curved frontal profile, projecting lateral lobes (eyes?), and strongly developed but incompletely preserved mandibles. There are seven thoracic segments, followed by an abdomen consisting of two very large segments. The terminal segment ends in a slightly upturned point. Uropods are visible on its sides. The body is laterally compressed, with a median ridge on the head and abdomen.

In Bate's reconstruction four abdominal somites and a telson are added which make the fossil appear like an Amphipod but Geinitz and in fact Bate himself figured what are obviously the basal portions of the

uropods on the sides of the second abdominal somite. This observation, in conjunction with the fact that only the two abdominal segments have been found, in identical relative position in all known specimens, makes it clear that the first segment represents the fused abdominal segments 1-5. A drawing of the only known fossil Phreatoicoid (fig. 1b) in which the sutures between these somites are omitted, demonstrates the striking resemblance between *Palaeocrangon* and the Phreatoicoids. Fusion of abdominal somites does not occur in recent Phreatoicoids but it is known in the suborders Flabellifera and Valvifera. It is not a primitive character and for this reason *Palaeocrangon* must be excluded from the Phreatoicoidea and placed between them and the higher suborders of the Isopods. According to Nicholls (1943-4) "the closest relationship (of the Phreatoicoidea) within the Isopods would appear to be with the Cirolanidae rather than with the Asellota. To non-Isopodan groups, the Amphisopidae seem nearest akin to the Apseudidae (Tanaidacea), and since these latter are presumably representative of a more primitive stock of the Peracarida, with possible relationships to the Amphipoda, the resemblance of the Phreatoicoids to the Amphipodan type may be indicative of parallelism in evolution in forms derived from a common stock rather than, as Chilton has maintained, merely a superficial resemblance due to convergent evolution".

The occurrence of the primitive *Palaeocrangon* with pronounced Phreatoicoid affinities in the Permian is in good agreement with these views.

In a supplementary note to his paper, Nicholls (1944, p. 155-6) expresses the opinion that *Acanthotelson* forms a link between the Syncarida and the Phreatoicoidea and that the family Acanthotelsonidae might even be included in this suborder. This is particularly interesting in connection with Calman's statement (1933) on possible relations of the Syncarida, through the Acanthotelsonidae, with *Anthracoecaris* which has characters that could be expected to occur in the ancestors of the Tanaidacea.

It is likely that the Orders Tanaidacea, Isopoda (through *Palaeocrangon* and the early Phreatoicoidea) and possibly also Amphipoda (of which no definite pre-Tertiary fossil representatives are known) are related to early Anaspidae by way of the Acanthotelsonidae.

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